1. Determine the domain of the function below.

$$f(x) = \frac{5}{36x^2 - 66x + 30}$$

A. All Real numbers except $x = a$, where $a \in [29.87, 30.11]$

B. All Real numbers.

C. All Real numbers except $x = a$ and $x = b$, where $a \in [0.66, 0.99]$ and $b \in [0.96, 1.04]$

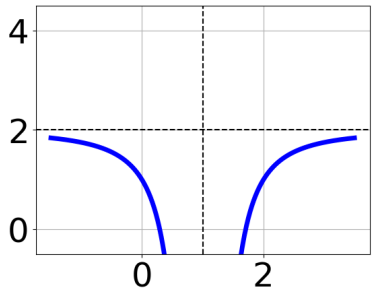
D. All Real numbers except $x = a$ and $x = b$, where $a \in [29.87, 30.11]$ and $b \in [35.75, 36.14]$

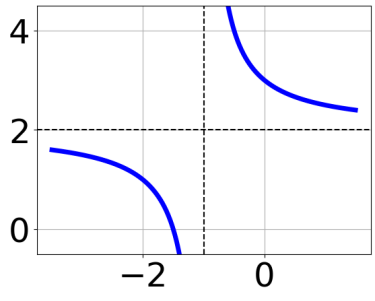
E. All Real numbers except $x = a$, where $a \in [0.66, 0.99]$

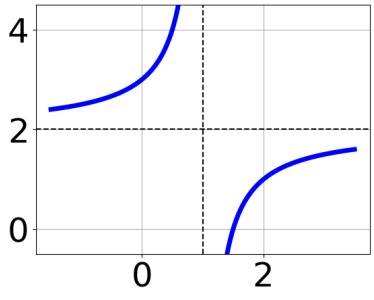
---

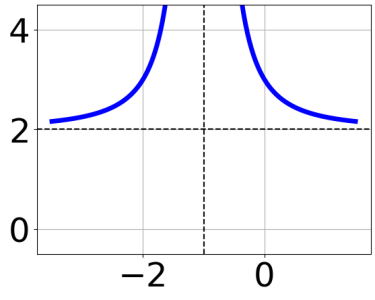
2. Choose the graph of the equation below.

$$f(x) = \frac{-1}{x - 1} + 2$$

A.


C.


B.


D.


E. None of the above.

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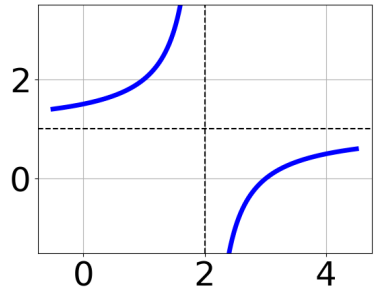
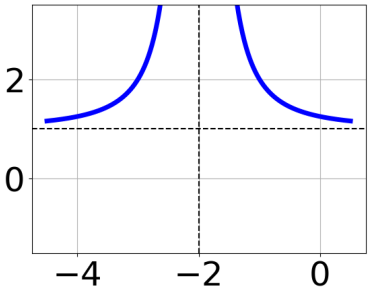
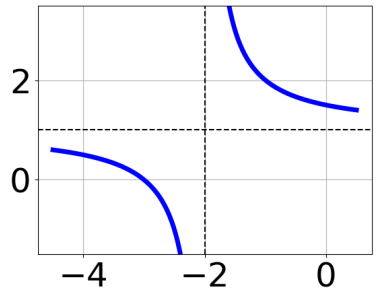
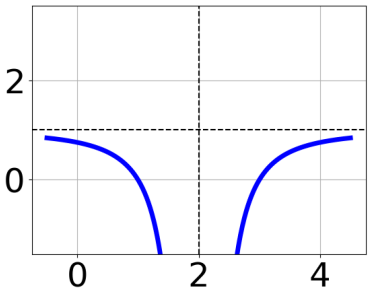
3. Choose the graph of the equation below.

$$f(x) = \frac{-1}{(x-2)^2} + 1$$

A. 

C. 

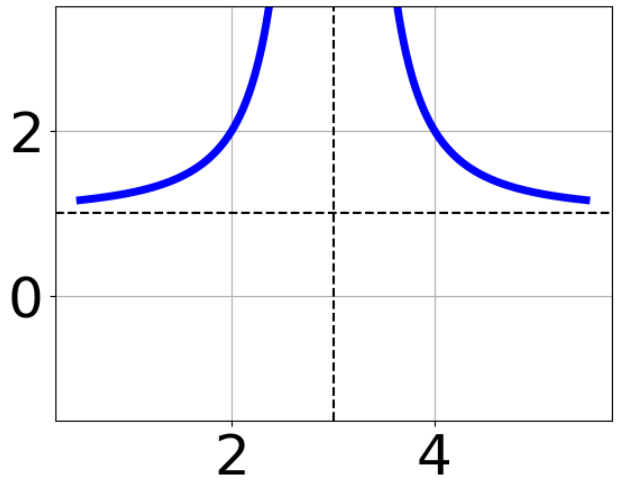
B. 

D. 

E. None of the above.

---

4. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{1}{(x+3)^2} + 7$

B. $f(x) = \dfrac{-1}{x-3} + 7$

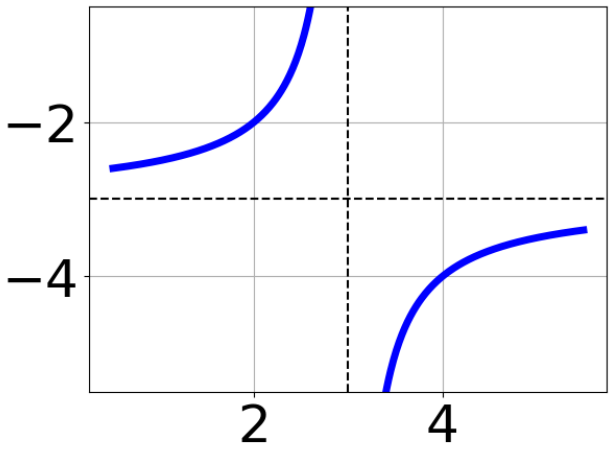
C. $f(x) = \dfrac{-1}{(x-3)^2} + 7$

D. $f(x) = \dfrac{1}{x+3} + 7$

E. None of the above

---

5. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{-1}{(x-3)^2} - 3$

B. $f(x) = \dfrac{1}{(x+3)^2} - 3$

C. $f(x) = \dfrac{-1}{x-3} - 3$

D. $f(x) = \dfrac{1}{x+3} - 3$

E. None of the above

---

6. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{6}{-2x-3} + -5 = \frac{5}{-14x-21}$$

A. $x \in [-1.03, 1.97]$

B. All solutions lead to invalid or complex values in the equation.

C. $x_1 \in [-2.03, 0.97]$ and $x_2 \in [-0.03, 1.97]$

D. $x \in [-2.03, -0.03]$

E. $x_1 \in [-2.03, 0.97]$ and $x_2 \in [-1.6, 0.4]$

---

7. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-2}{-8x+2} + -2 = \frac{-9}{24x-6}$$

A. $x \in [-2.44, 1.56]$

B. $x_1 \in [-0.04, 0.14]$ and $x_2 \in [0.56, 3.56]$

C. $x \in [-0.04, 0.14]$

D. All solutions lead to invalid or complex values in the equation.

E. $x_1 \in [-0.22, -0]$ and $x_2 \in [0.56, 3.56]$

---

8. Determine the domain of the function below.

$$f(x) = \frac{4}{12x^2 + 39x + 30}$$

A. All Real numbers except $x = a$ and $x = b$, where $a \in [-20.06, -19.04]$ and b $[-18.48, -16.42]$

B. All Real numbers except $x = a$, where $a \in [-2.49, -1.52]$

C. All Real numbers except $x = a$, where $a \in [-20.06, -19.04]$

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-2.49, -1.52]$ and $b \in [-1.37, -1.17]$

E. All Real numbers.

---

9. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{7x}{4x-3} + \frac{-7x^2}{-20x^2+39x-18} = \frac{3}{-5x+6}$$

A. $x \in [1.08, 1.38]$

B. All solutions lead to invalid or complex values in the equation.

C. $x_1 \in [-0.3, 0.02]$ and $x_2 \in [0.37, 0.85]$

D. $x_1 \in [-0.3, 0.02]$ and $x_2 \in [0.81, 1.28]$

E. $x \in [0.92, 1.12]$

---

10. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{2x}{4x+6} + \frac{-6x^2}{24x^2+56x+30} = \frac{-6}{6x+5}$$

A. $x \in [-1.37, 1.64]$

B. All solutions lead to invalid or complex values in the equation.

C. $x \in [-2.74, -1.09]$

D. $x_1 \in [-4.68, -3.43]$ and $x_2 \in [-1.48, -1.33]$

E. $x_1 \in [-4.68, -3.43]$ and $x_2 \in [-1.54, -1.46]$

---

11. Determine the domain of the function below.

$$f(x) = \frac{4}{20x^2+3x-9}$$

A. All Real numbers.

B. All Real numbers except $x = a$ and $x = b$, where $a \in [-15, -8]$ and $b \in [14, 18]$

C. All Real numbers except $x = a$ and $x = b$, where $a \in [-3.75, 0.25]$ and $b \in [-0.4, 1.6]$

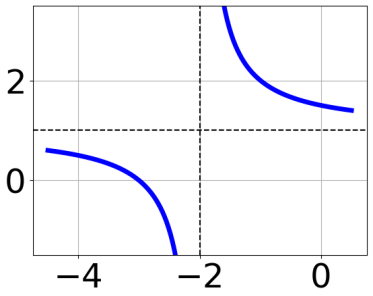
D. All Real numbers except $x = a$, where $a \in [-3.75, 0.25]$

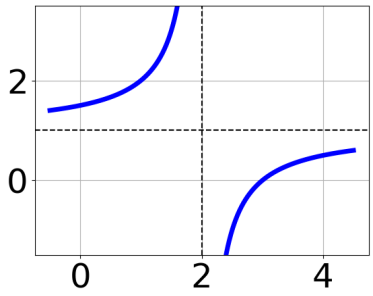
E. All Real numbers except $x = a$, where $a \in [-15, -8]$

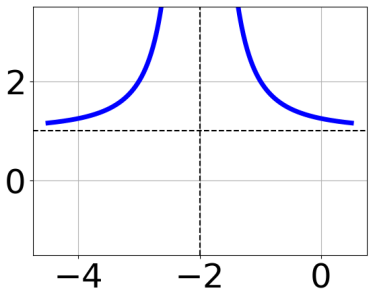
---

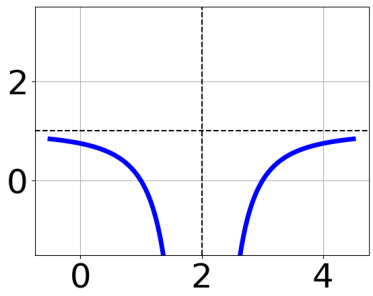
12. Choose the graph of the equation below.

$$f(x) = \frac{1}{(x+2)^2} - 1$$

A.


C.


B.


D.


E. None of the above.

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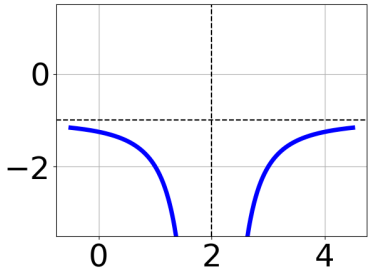
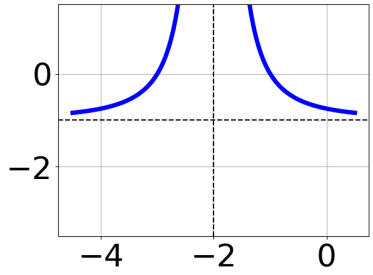
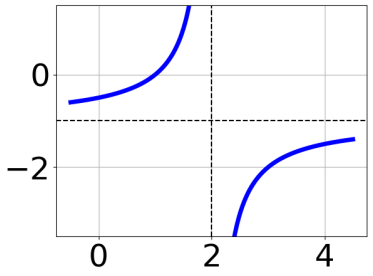
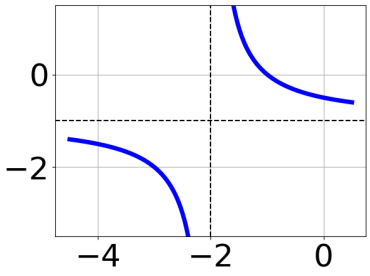
13. Choose the graph of the equation below.

$$f(x) = \frac{-1}{(x-2)^2} - 1$$

A.


B.


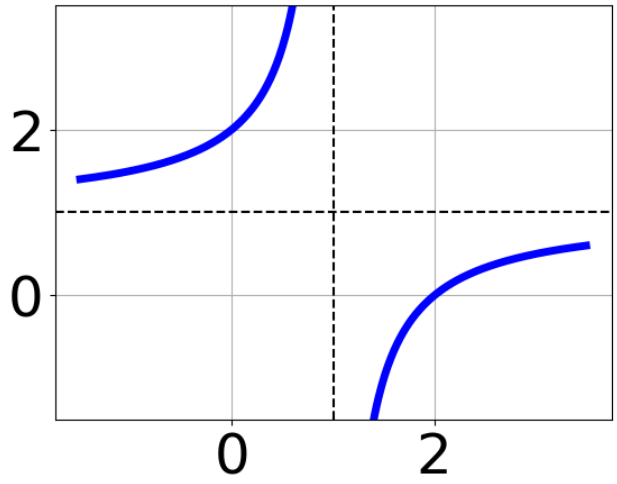
C. 

D. 

E. None of the above.

---

14. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{1}{(x-1)^2} + 2$

B. $f(x) = \dfrac{-1}{(x+1)^2} + 2$

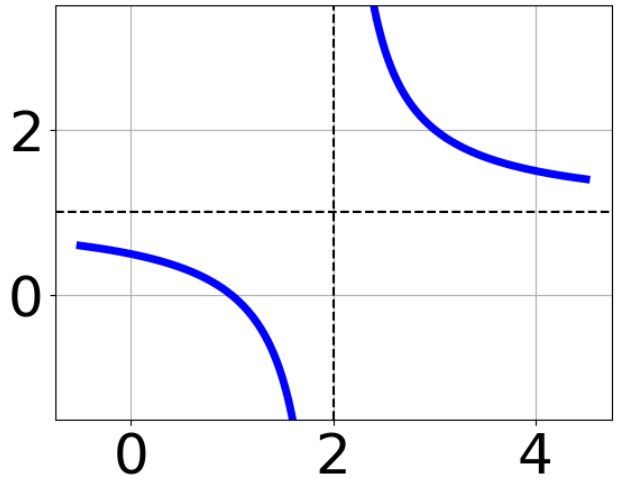
C. $f(x) = \dfrac{-1}{x+1} + 2$

D. $f(x) = \dfrac{1}{x-1} + 2$

E. None of the above

---

15. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{-1}{(x+2)^2} + 1$

B. $f(x) = \dfrac{-1}{x+2} + 1$

C. $f(x) = \dfrac{1}{(x-2)^2} + 1$

D. $f(x) = \dfrac{1}{x-2} + 1$

E. None of the above

---

16. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{5}{5x+7} + -5 = \frac{3}{10x+14}$$

A. $x_1 \in [-1.27, -1.2]$ and $x_2 \in [1.54, 2.54]$

B. $x_1 \in [-1.37, -1.31]$ and $x_2 \in [-2.26, -0.26]$

C. All solutions lead to invalid or complex values in the equation.

D. $x \in [-1.26, -0.26]$

E. $x \in [1.46, 1.65]$

---

17. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{65}{-117x-39}+1=\frac{65}{-117x-39}$$

A. $x \in [-0.2, 0.5]$

B. All solutions lead to invalid or complex values in the equation.

C. $x_1 \in [-0.7, -0.1]$ and $x_2 \in [-0.2, 1.3]$

D. $x \in [-2.33, 0.67]$

E. $x_1 \in [-0.7, -0.1]$ and $x_2 \in [-1.4, -0.3]$

---

18. Determine the domain of the function below.

$$f(x)=\frac{5}{15x^2+21x-18}$$

A. All Real numbers except $x = a$ and $x = b$, where $a \in [-19, -14]$ and $b \in [15, 18]$

B. All Real numbers except $x = a$, where $a \in [-3, -1]$

C. All Real numbers.

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-3, -1]$ and $b \in [-1.4, 2.6]$

E. All Real numbers except $x = a$, where $a \in [-19, -14]$

---

19. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{7x}{2x+7}+\frac{-4x^2}{6x^2+27x+21}=\frac{-6}{3x+3}$$

A. $x_1 \in [-3.55, -2.83]$ and $x_2 \in [-2.09, -0.1]$

B. $x \in [-1.49, -0.72]$

C. $x_1 \in [-2.46, -1.32]$ and $x_2 \in [-0.44, 3.39]$

D. $x \in [-3.55, -2.83]$

E. All solutions lead to invalid or complex values in the equation.

---

20. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{4x}{6x-2} + \frac{-2x^2}{36x^2+24x-12} = \frac{7}{6x+6}$$

A. $x_1 \in [-0.19, 1.3]$ and $x_2 \in [-2, 0]$

B. All solutions lead to invalid or complex values in the equation.

C. $x \in [-1.35, -0.38]$

D. $x_1 \in [-0.47, 0.19]$ and $x_2 \in [0.99, 1.99]$

E. $x \in [-0.19, 1.3]$

---

21. Determine the domain of the function below.

$$f(x) = \frac{4}{18x^2+36x+16}$$

A. All Real numbers except $x = a,$ where $a \in [-25.3, -23]$

B. All Real numbers except $x = a,$ where $a \in [-2.2, -0.9]$

C. All Real numbers.

D. All Real numbers except $x = a$ and $x = b,$ where $a \in [-25.3, -23]$ and $b \in [-13.3, -11.7]$

E. All Real numbers except $x = a$ and $x = b,$ where $a \in [-2.2, -0.9]$ and $b \in [-1.1, 0.1]$

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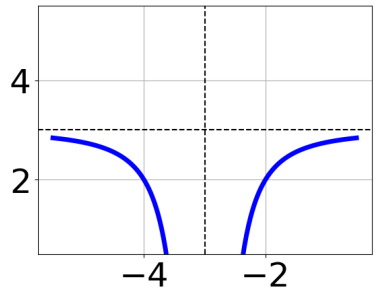
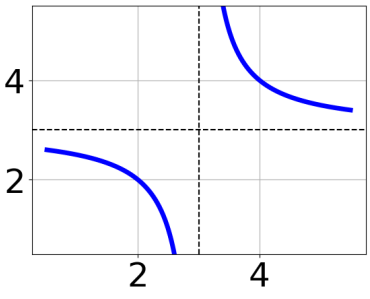
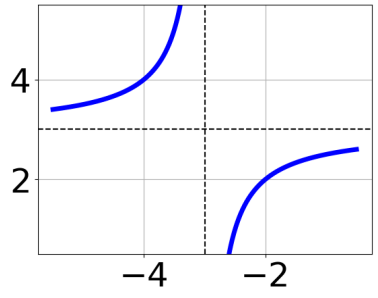
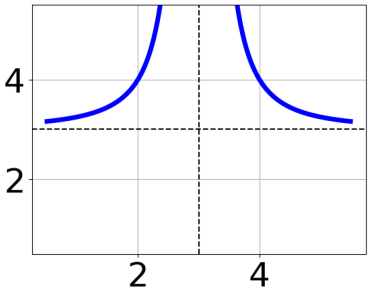
22. Choose the graph of the equation below.

$$f(x) = \frac{1}{(x-3)^2} + 3$$

A. 

C. 

B. 

D. 

E. None of the above.

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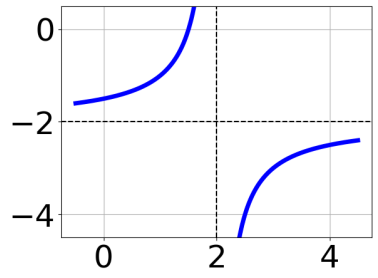
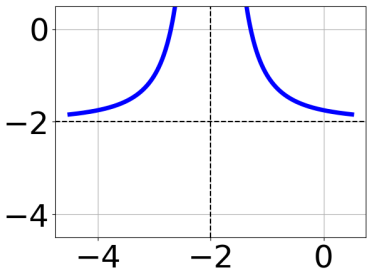
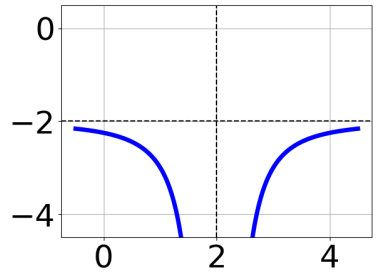
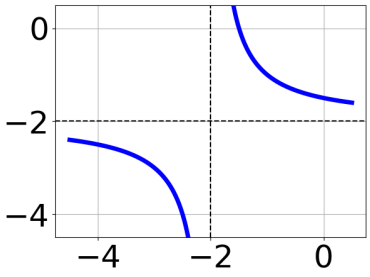
23. Choose the graph of the equation below.

$$f(x) = \frac{1}{x+2} - 2$$

A. 

C. 

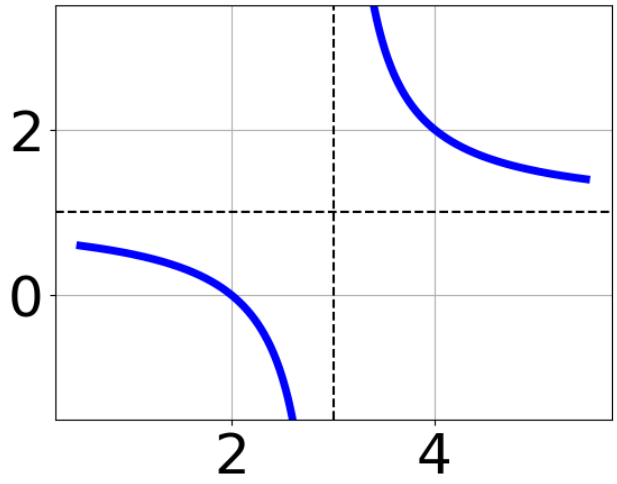
B. 

D. 

E. None of the above.

---

24. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{-1}{x+3} + 1$

B. $f(x) = \dfrac{-1}{(x+3)^2} + 1$

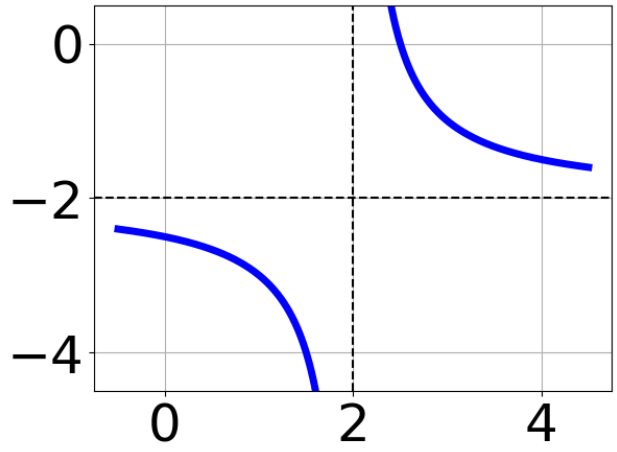
C. $f(x) = \dfrac{1}{x-3} + 1$

D. $f(x) = \dfrac{1}{(x-3)^2} + 1$

E. None of the above

---

25. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{1}{x+2} - 5$

B. $f(x) = \dfrac{-1}{x-2} - 5$

C. $f(x) = \dfrac{1}{(x+2)^2} - 5$

D. $f(x) = \dfrac{-1}{(x-2)^2} - 5$

E. None of the above

---

26. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-10}{40x+20} + 1 = \frac{-10}{40x+20}$$

A. $x \in [0, 1.4]$

B. $x_1 \in [-0.9, -0.3]$ and $x_2 \in [-1.8, 0.3]$

C. $x_1 \in [-0.9, -0.3]$ and $x_2 \in [-0.4, 1.5]$

D. $x \in [-0.5, 1.5]$

E. All solutions lead to invalid or complex values in the equation.

---

27. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{6}{-2x-9} + -3 = \frac{-4}{18x+81}$$

A. $x \in [3.1, 3.8]$

B. $x \in [-5.43, -4.43]$

C. All solutions lead to invalid or complex values in the equation.

D. $x_1 \in [-6.7, -5.6]$ and $x_2 \in [-5.43, -3.43]$

E. $x_1 \in [-5.5, -5.2]$ and $x_2 \in [2.57, 4.57]$

---

28. Determine the domain of the function below.

$$f(x) = \frac{6}{24x^2 - 38x + 15}$$

A. All Real numbers except $x = a$, where $a \in [0.71, 0.77]$

B. All Real numbers.

C. All Real numbers except $x = a$ and $x = b$, where $a \in [0.71, 0.77]$ and $b \in [0.82, 0.85]$

D. All Real numbers except $x = a$, where $a \in [11.91, 12.1]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [11.91, 12.1]$ and $b \in [29.9, 30.18]$

---

29. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-2x}{2x + 2} + \frac{-4x^2}{-12x^2 - 18x - 6} = \frac{-7}{-6x - 3}$$

A. $x_1 \in [-1.47, -1.27]$ and $x_2 \in [-0.26, 0.74]$

B. $x \in [-0.58, -0.31]$

C. All solutions lead to invalid or complex values in the equation.

D. $x_1 \in [-1.18, -0.67]$ and $x_2 \in [-1.64, -0.49]$

E. $x \in [-1.18, -0.67]$

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30. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-3x}{-6x + 5} + \frac{-2x^2}{-12x^2 + 52x - 35} = \frac{-4}{2x - 7}$$

A. $x \in [3.15, 4.34]$

B. $x \in [-3.35, -0.26]$

C. $x_1 \in [0.39, 3.08]$ and $x_2 \in [-1.17, 7.83]$

D. $x_1 \in [0.39, 3.08]$ and $x_2 \in [-2.78, -0.78]$

E. All solutions lead to invalid or complex values in the equation.
